



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/647,436

08/26/2003

Jonah Erlebacher

JHU-0003

1729

34610 7590 03/21/2007
KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

EXAMINER

ECHELMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1745

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|-----------|---------------|
|--|-----------|---------------|

3 MONTHS

03/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/647,436

Applicant(s)

ERLEBACHER ET AL.

Examiner

Alix Elizabeth Echelmeyer

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935.C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 16-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1-21-04, 3-17-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Claims 1-15 in the reply filed on October 12, 2006 is acknowledged. The traversal is on the grounds that the disclosed groups and species do not produce a burdensome search for the examiner since the subject matter of each of the designated inventions encompasses the same search for the subject matter of the remaining inventions.
2. The examiner concedes that the species restriction was improper, and instead has the following reasons for restriction:
3. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to a membrane, classified in class 428, subclass 610.
 - II. Claims 16-40, drawn to a polymer electrolyte membrane and its use in a fuel cell, classified in class 429, subclass 13.
 - III. Claims 41-52, drawn to a method for making the nanoporous metal membrane, classified in class 428, subclass 613.
 - IV. Claims 53-64, drawn to another method for making the nanoporous membrane, classified in class 428, subclass 613.

The inventions are distinct, each from the other because of the following reasons:

4. Inventions I and II, III and IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process

(MPEP § 806.05(f)). In the instant case the two different methods of Groups II and III show that the product of Group I can be made by different processes.

5. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as a filter to separate particles. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1745

7. Claims 1, 3-6 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Sieradzki et al. (US Patent 4,977,038).

Concerning claims 1 and 3, Sieradzki et al. teach a nano-porous gold structure that may be used as a membrane or filter (abstract; column 1 lines 11-12, 35-57; column 4 lines 33-35). Further, and with regard to claims 4-6, a platinum layer is located on one or both sides of the membrane (Figure 2, lines 6-11, 26-29).

Regarding claims 12-15, Sieradzki et al. teach that the thickness of the membrane or filter may be 0.0001-10 mm thick (column 1 line 28). (0.0001 mm = 100 nm). Since Sieradzki et al. teach that the membrane may be 100 nm, and the limitations of claims 12 and 15 are drawn to "about 100 nm", Sieradzki et al. teach the thickness of the invention. With further regard to claim 15, "about 100 nm" could be 101 nm, or even 100.1 nm. Therefore, 100 nm is less than about 100 nm.

As for the limitations of claim 1 that the layer is plated, that limitations is not given patentable weight since it is interpreted to be a product by process limitation. The courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)). MPEP 2113.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1745

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sieradzki et al. in view of Chang (US Pre-Grant Publication 2001/0041277).

The teachings of Sieradzki et al. as discussed above are incorporated herein.

Sieradzki et al. teach a nano-porous gold membrane with a platinum layer but fail to teach that the layer is made from more than one element, and also fail to teach the specifically claimed thickness and loading densities.

Regarding claim 2, Chang teaches that the catalyst layer for the membrane of a membrane-electrode assembly is preferably 10-100 nm thick ([0044]). It is further taught that the catalyst layer should be less than 100 nm since it is difficult to form an effective interface with the membrane when the catalyst layer is thicker ([0044]). Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

As for claim 7, Chang teaches catalysts for fuel cell membranes (abstract). Chang further teaches that the catalyst may be made from platinum, palladium, or rhodium, or combinations of those elements ([0019]).

Regarding claims 8-11, Chang further teaches that the loading density of the catalyst is preferably in the range of 0.01-0.2 mg/cm² ([0045]).

Art Unit: 1745

It would be desirable to use the combination catalyst as taught by Chang, and in small amounts, in order to reduce to cost of the catalyst layer to below the costs of pure platinum catalysts.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the combination catalyst as taught by Chang, and in small amounts, in order to reduce to cost of the catalyst layer to below the costs of pure platinum catalysts.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



SUSY TSANG-FOSTER
PRIMARY EXAMINER

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee


SUSY TSANG-FOSTER
PRIMARY EXAMINER